

**WHAT IS CLAIMED IS:**

1. An isolated nucleic acid sequence encoding a hSMMMyHC polypeptide, wherein the polypeptide has the following properties: (i) the polypeptide's activity includes ATPase function or the ability to bind actin; and (ii) the polypeptide has an amino acid sequence which has greater than 70% sequence identity with SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14 as measured using a sequence comparison algorithm.
2. An isolated nucleic acid sequence of claim 1, wherein the protein specifically binds to polyclonal antibodies generated against a protein comprising SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14v
3. An isolated nucleic acid sequence of claim 1, wherein the nucleic acid encodes SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14.
4. An isolated nucleic acid sequence of claim 1, wherein the nucleic acid has a nucleotide sequence of SEQ ID NO1; SEQ ID NO:3; SEQ ID NO:5; SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13.
5. An isolated nucleic acid sequence of claim 1, wherein the nucleic acid selectively hybridizes under stringent hybridization conditions to a nucleic acid having a sequence of or a complementary sequence to SEQ ID NO1; SEQ ID NO:3; SEQ ID NO:5; SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13.
6. An expression vector comprising a nucleic acid encoding an hSMMMyHC polypeptide, wherein the protein has the following properties: (i) the protein's activity includes ATPase function or the ability to bind actin; and (ii) the protein has a sequence that has greater than 90% amino acid sequence identity to SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14as measured using a sequence comparison algorithm.

7. A host cell transfected with the vector of claim 6.

8. An isolated hSMMMyHC polypeptide, wherein the protein has greater  
5 than 90% amino acid sequence identity to SEQ ID NO:2; SEQ ID NO:4; SEQ ID  
NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14 as  
measured using a sequence comparison algorithm.

9. An isolated protein of claim 8, wherein the protein specifically binds to  
10 polyclonal antibodies generated against a protein comprising SEQ ID NO:2; SEQ ID  
NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID  
NO:14.

10. An isolated protein of claim 8, wherein the protein is SEQ ID NO:2;  
15 SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or  
SEQ ID NO:14.

11. A method for screening for modulators of an hSMMMyHC polypeptide,  
the method comprising the steps of:

20 (i) providing biologically active hSMMMyHC polypeptide, wherein has the  
following properties: (i) activity including ATPase function or the ability to bind  
actin; and (ii) sequence that has greater than 90% amino acid sequence identity to  
SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID  
NO:12, or SEQ ID NO:14.as measured using a sequence comparison algorithm;

25 (ii) contacting biologically active hSMMMyHC polypeptide with a candidate  
agent in a test and control concentration; and

(iii) assaying for the level of hSMMMyHC polypeptide activity, wherein the  
hSMMMyHC polypeptide activity is selected from the group consisting of actin binding  
activity or ATPase activity, and wherein a change in activity between the test and  
30 control concentration indicates a modulator.

12. A method of claim 11, wherein the screening occurs in a multi-well

plate as part of a high-throughput screen.

13. A method of claim 12, wherein the biologically active hSMMMyHC polypeptide comprises an amino acid sequence of SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14.

14. An isolated nucleic acid comprising a sequence which has greater than 80% sequence identity with a nucleotide having a sequence of or a complementary sequence of SEQ ID NO:1; SEQ ID NO:3; SEQ ID NO:5; SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13.

15. The nucleic acid of claim 14 having a sequence of or a complementary sequence of SEQ ID NO:1; SEQ ID NO:3; SEQ ID NO:5; SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13.

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